USER'S MANUAL

for

EasyPrint S32 Printers

BELL-MARK

Innovative Coding & Printing Solutions

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SAFETY

Before working on the printer, please read this section thoroughly. Always keep personal safety in mind while working on the machine.

Safety Flags

Throughout this manual we will use the following graphic symbols, **CAUTION** and **WARNING** to alert the operator to any and all known or perceived safety concerns.

CAUTION

THIS SAFETY WARNING POINTS OUT AREAS THAT CAN CAUSE PERSONAL INJURY OR DAMAGE TO THE MACHINE.

WARNING

THIS SAFETY WARNING POINTS OUT AREAS THAT CAN CAUSE SERIOUS INJURY.

- **Do not operate this equipment while under the influence of alcohol or while taking any medications that may impair your judgment.**
- Only trained personnel should be allowed to operate this equipment.
- **Use the safety covers that are installed on the printer.**
- Do not attempt to defeat the safety switches and equipment interlocks.
- **Keep your fingers away from the printer's moving parts during operation.**
- Disconnect electrical power and pneumatic supplies before performing services or repairs on the printer.
- **The printer and its component parts should only be used for the purposes for which they were sold, and for which they were designed and constructed**.
- Do not wear loose clothing, such as neckties or shirts with loose sleeves.
- **Do not wear jewelry such as rings, necklaces or bracelets when working on the printer.**
- Pull back and tie long hair that might get caught in the machine.

We have endeavored to make this instruction manual as accurate as possible. Illustrations, photographs and text have been carefully checked.

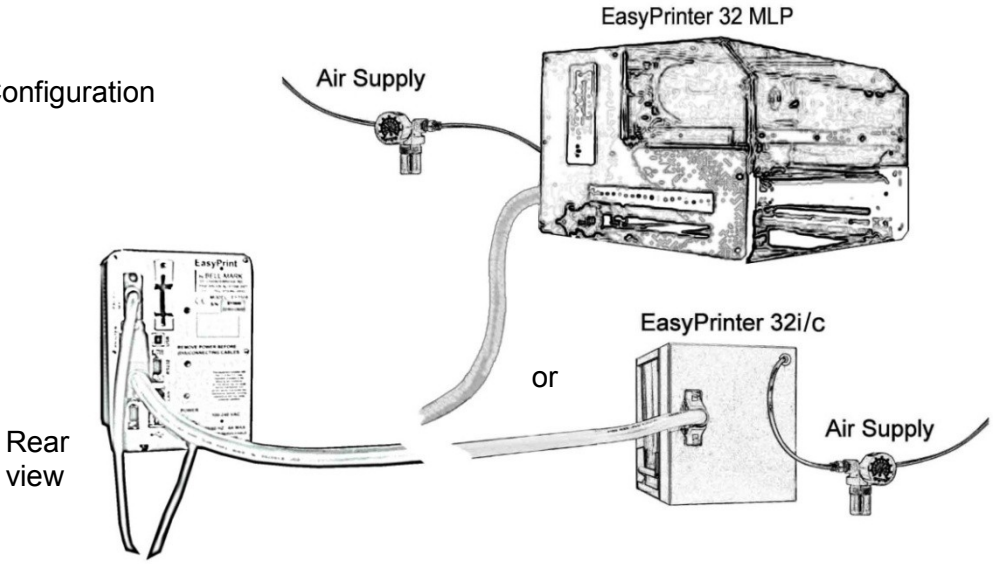
All instructions should be read, carefully studied and understood before attempting operation, maintenance or repair of the equipment described herein. If there is a question regarding any of the information presented here, please call 717-292-5641 or FAX 717-292-5686 and request Technical Support.

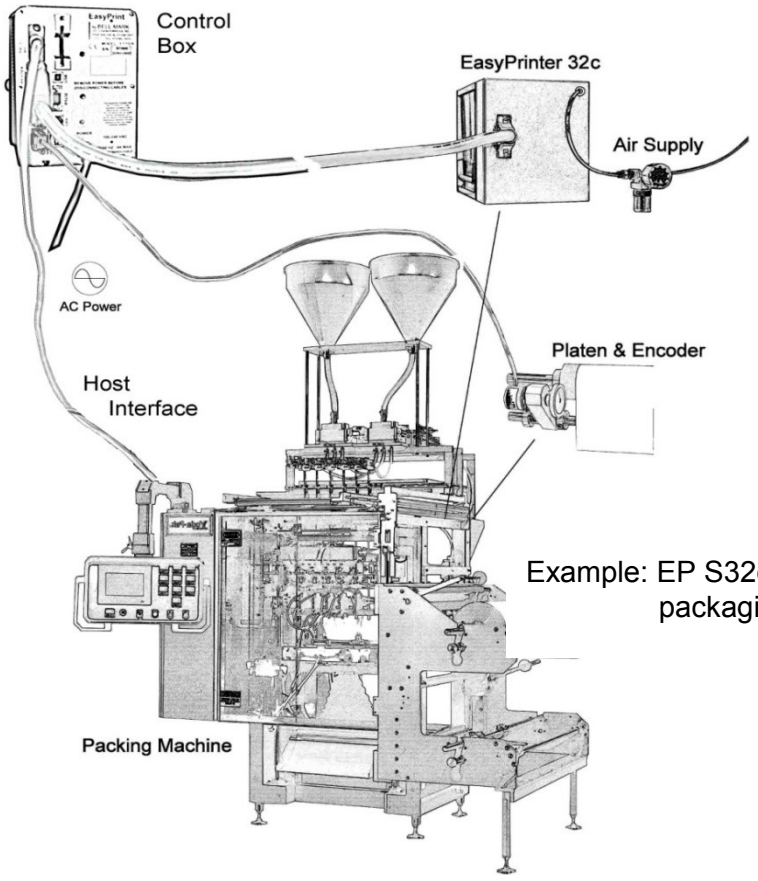
Due to the variability of local conditions, customer procedures and operator skill levels, neither the authors, nor Bell-Mark Corporation assume any responsibility for any accidents, injuries, damages, or other losses incurred resulting from the material presented in this manual.

PRINTER CONNECTIONS

EASYPRINT S32 - Typical System Configuration

General Configuration





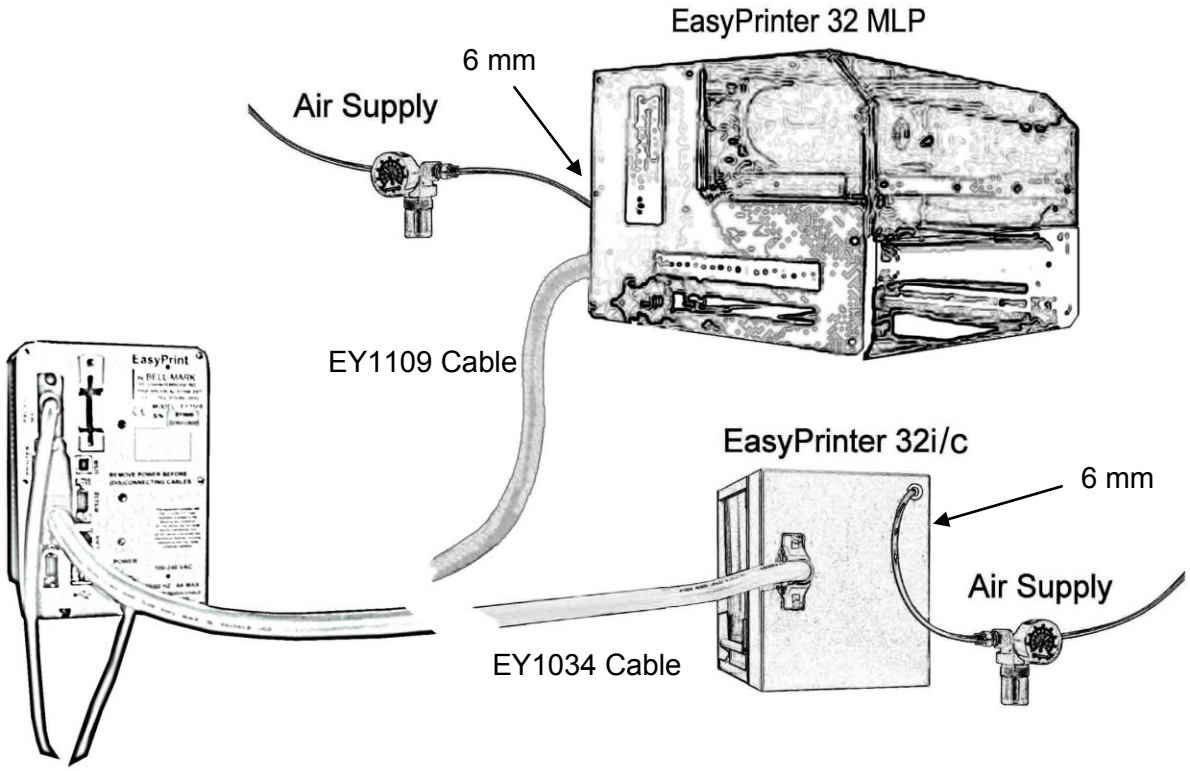
Example: EP S32c on a packaging machine

Whether the mlp, c, or i type printer - there are a minimum of 3 connections for operation:

1. **Electrical umbilical (to the control box)...**

CAUTION	CAUTION
Use only the genuine Bell-Mark cables. Using another cable will risk permanent damage to the equipment and possibly fire.	Always turn off power to the control box when connecting or disconnecting cables.

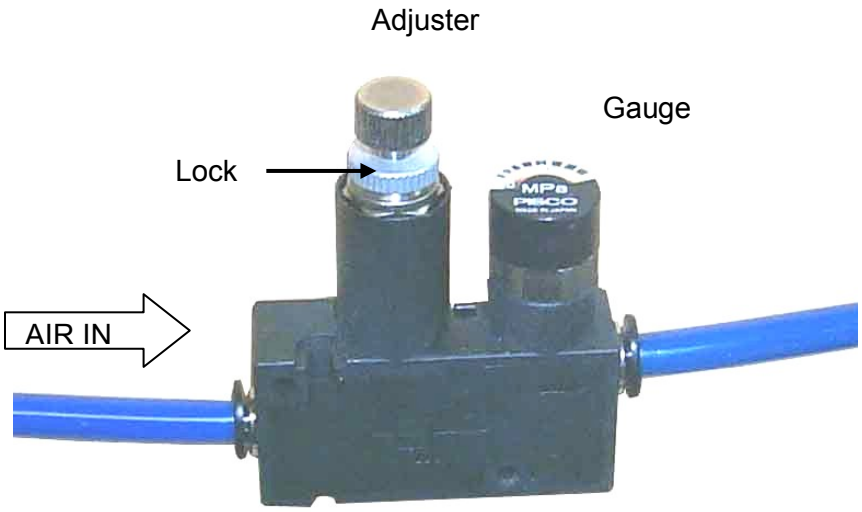
2. **Air Supply... use 6 mm OD plastic air line.**



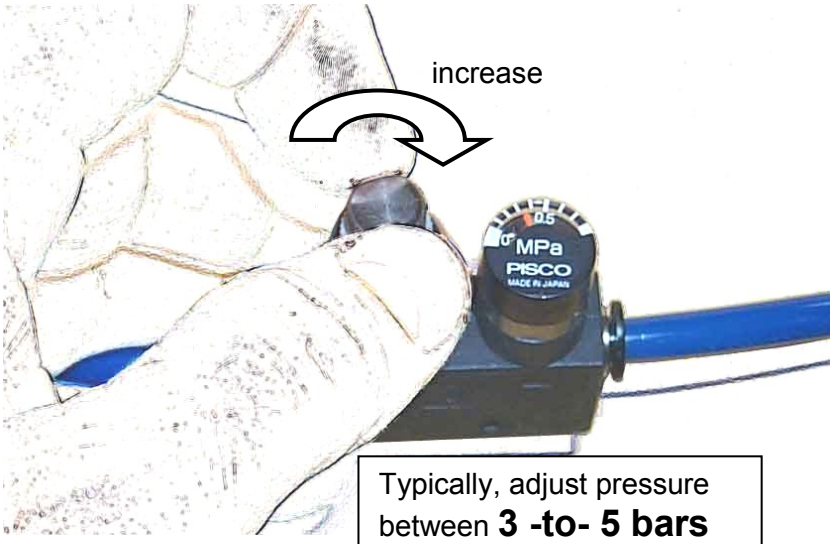
3. **AC Mains Supply... See details below.**

AIR PRESSURE REGULATOR & SETTING

- MLP printers have *internal* air regulators.
- C and I printers have *external* air regulators



Loosen the lock, adjust, retighten the lock.



Typically, adjust pressure between **3 -to- 5 bars**

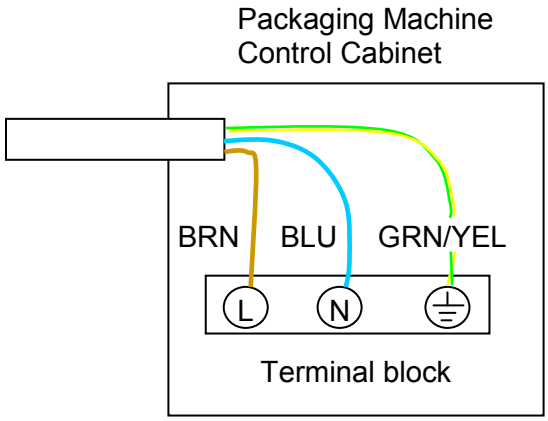
(0.3 – 0.4 MPa)

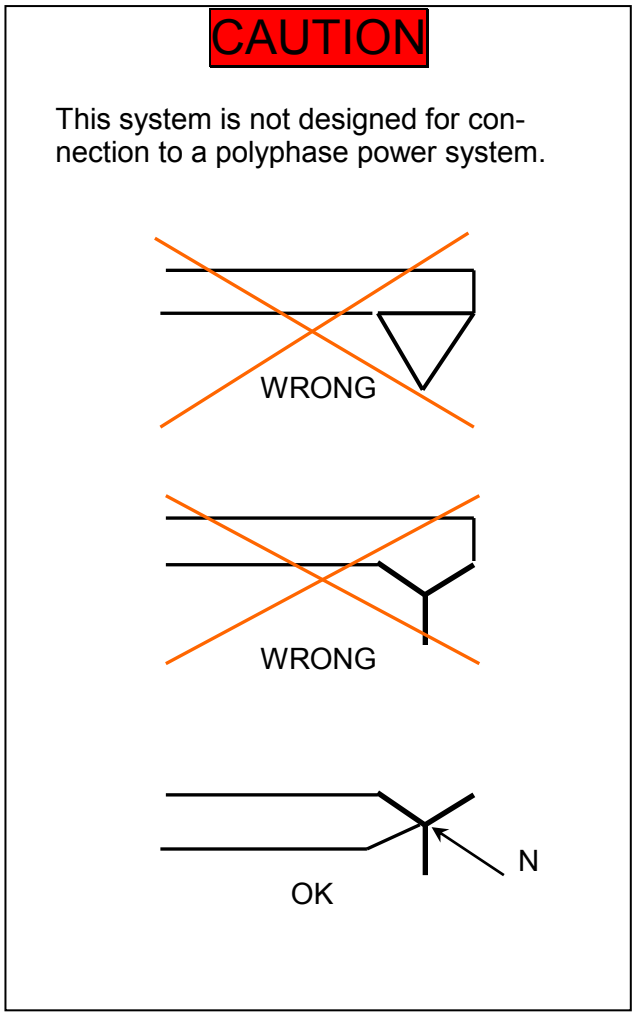
MAINS CONNECTION (AC POWER)

Power Requirements:
100-240 VAC 50/60Hz 1Ø with Earth
400 watts

Fuse: Internal, not user-serviceable.

Use the power cord furnished with your Bell-Mark printer. Connect the wires to the AC power terminals in your packaging machine.

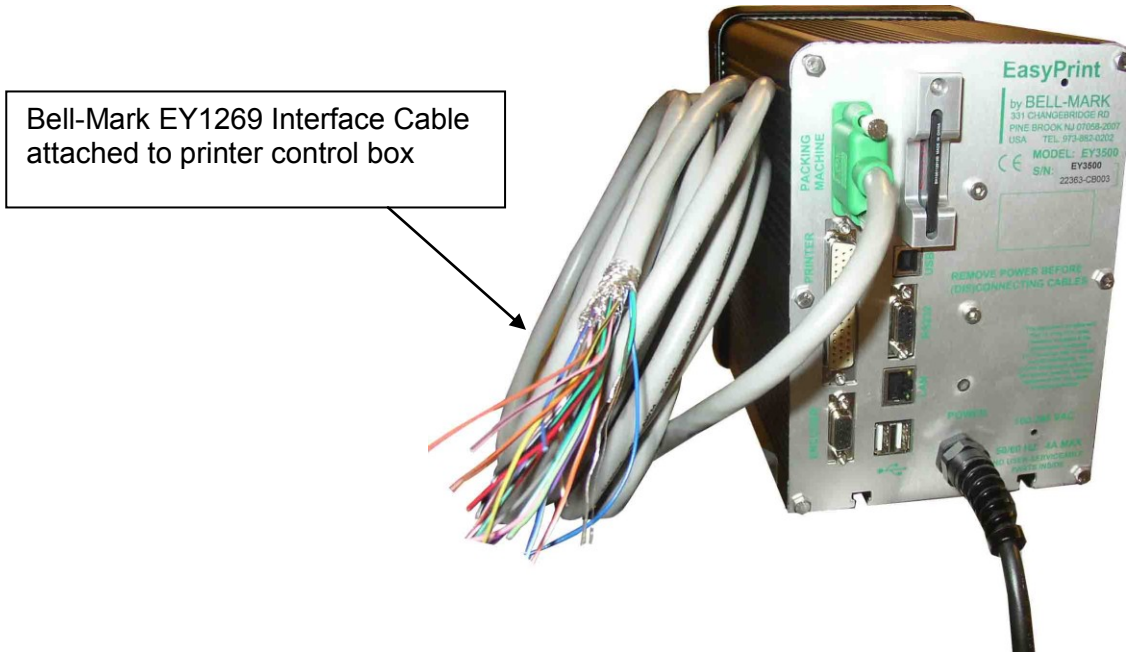


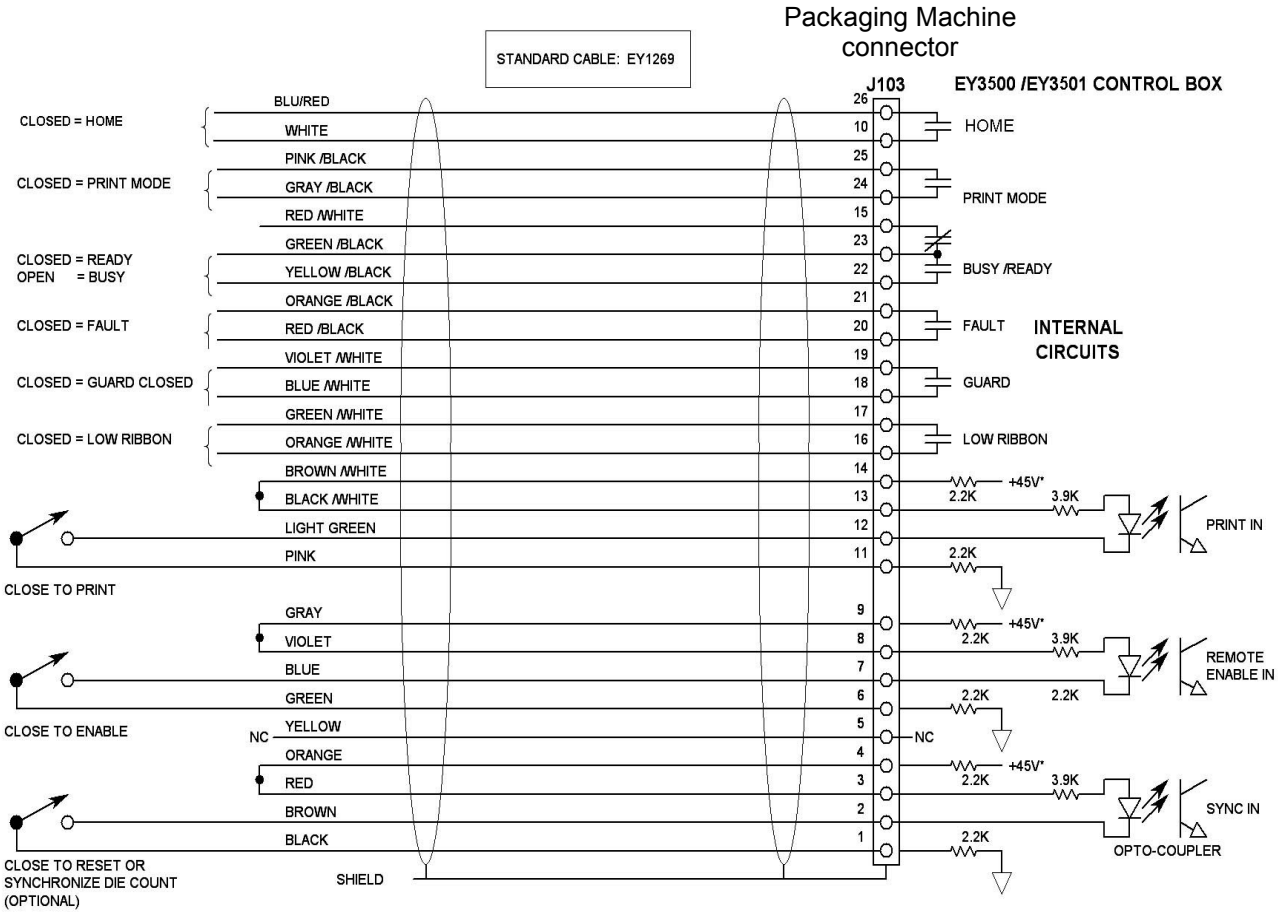


Disclaimer: *This is to be done in accordance with local and national electrical codes by a qualified technician.*

Note: Voltage selection by the EY3500/1 control box is automatic.

INTERFACE CONNECTIONS





INPUTS

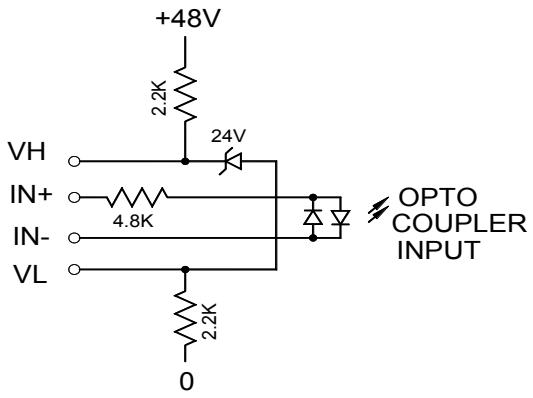
Details About the Printer Inputs

The **Print**, **Remote Enable**, and **Sync** inputs all have the same input structure.

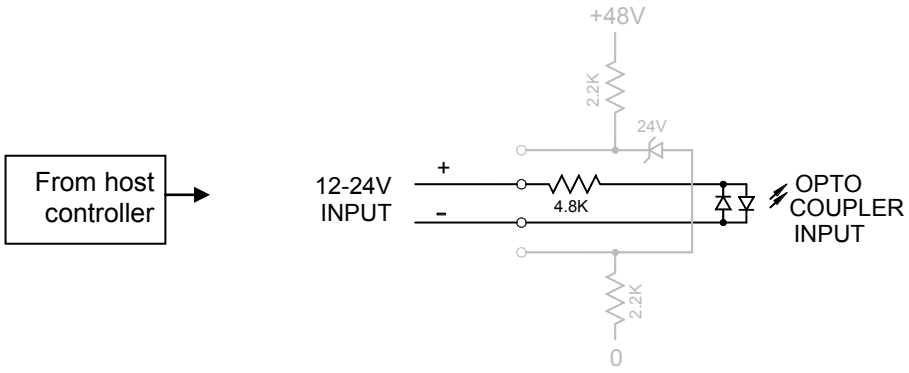
This design is fault-tolerant withstanding any combination of mis-wiring, polarity reversal, or accidental short circuits.

Further, it is compatible with most possible sources:

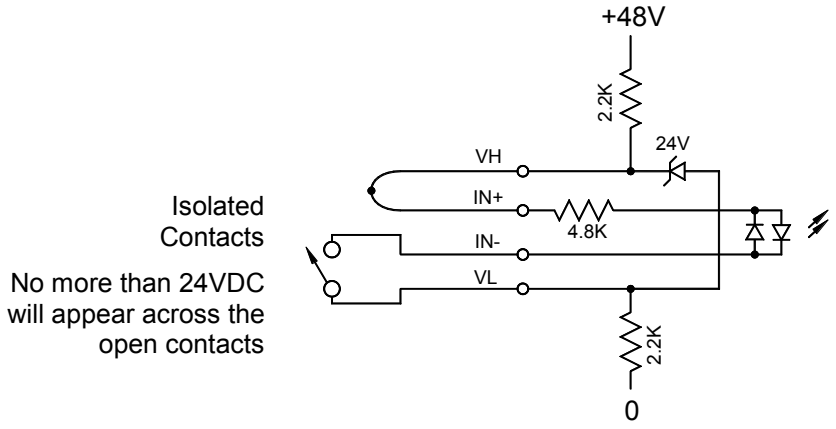
- relay contacts
- solid-state PNP
- solid-state NPN
- direct voltage



Potential-Free - The opto-coupler circuit is "potential-free" can be directly driven without fear by a PLC controller having either sourcing (PNP) or sinking (NPN) outputs.



Isolated Contact - If it is preferred, isolated mechanical or solid-state switch contacts may be used. In this case, the excitation voltage is furnished by the printer.



Remote Enable – You may connect a control signal from the packaging machine that provides a means of enabling or disabling the printer.

Asserting the input establishes the "*enable printer*" condition. This signal must be constantly held to maintain the enabled state.

Print Input - Connect a control signal from the packaging machine that signals the printer it must now print.

Asserting the input pulse triggers the printer to print once.

Sync Input – This input can have three uses:

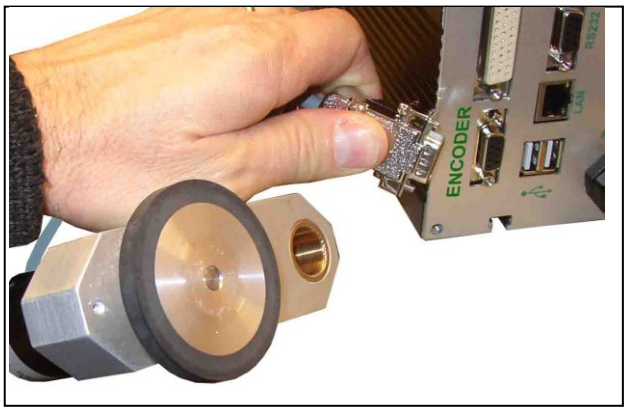
- **Reset the counter variable** - For a print job that uses the counter variable, a control signal pulse from the packaging machine can indicate to the printer it must now reset the count to the beginning.
- **Multi-Pack reset** - For a print job that uses the Multi-Pack feature, a control signal from the packaging machine can indicate to the printer it must now reset the label to start printing the first package.
- **Force printer reboot** – to start the printer from a known condition including clearing any existing print job, a control signal from the packaging machine must hold this signal for 3 seconds or more.

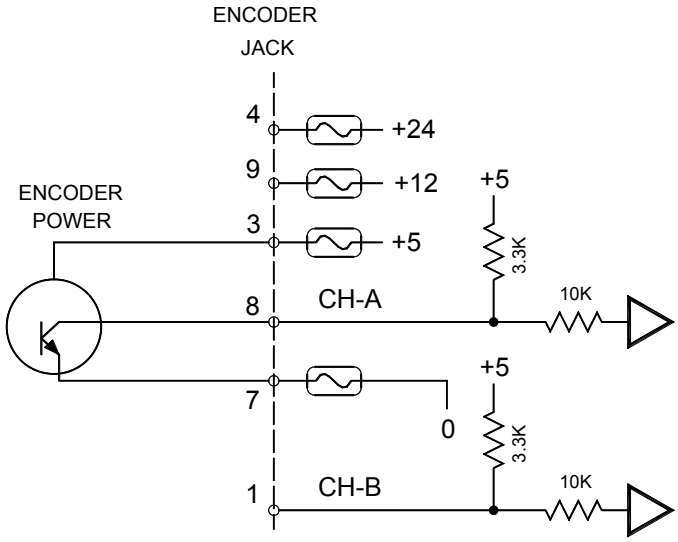
ENCODER INPUT

Only for C-type (continuous) printers

The printer supports encoders:

- 10 pulses per millimeter
- 12 pulses per millimeter *standard
- NPN Open-collector output
- Single or dual channel
- 5VDC, 12VDC, or 24VDC -powered





Only CH-A is required for operation. However, dual-channel encoders may be connected.

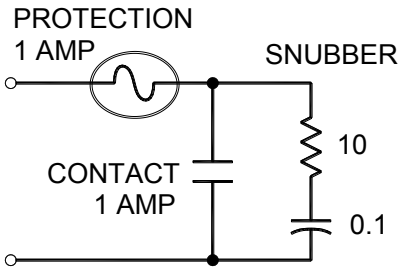
The voltage sources furnished by the printer as well as the common, are all protected by 0.6A automatically-resetting protection.

OUTPUTS

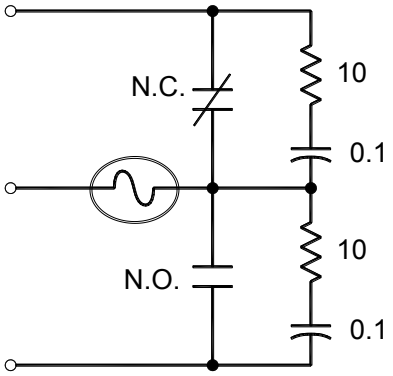
Details About the Printer Outputs

The **Print Mode, Fault, Guard-Cassette**, **Low Ribbon**, and **Home** outputs all have the same output structure. **Ready-Busy** is the same except a normally-closed contact is also available.

Most Outputs



Ready-Busy Output only



Notes:

- The printer's relay contacts are rated for low-voltage use – below 48 volts AC or DC.
- The contact protection device is automatically-resetting.
- With printer AC power = OFF, all N.O. relay contacts will be open.

Function Summary

Output	Condition	Normally-Open Contact State
Print Mode	Print job is loaded/activated, printer is armed to print.	closed-circuit
Fault	The printer has one or more faults	closed-circuit
Guard-Cassette	The guard or cassette is closed	closed-circuit
Low Ribbon	The ribbon is nearly finished	closed-circuit
Home (I & MLP printers only)	The print carriage is home	closed-circuit
Ready-Busy	The printer is printing The print stroke is finished – OK to pull web	open-circuit closed-circuit

Print Mode - Connect this control signal from the printer to indicate to the packaging machine that a print job has been loaded and the printer is in the print mode, without problems – regardless of idling or actively printing.

A ***closed circuit*** indicates the printer is in the print mode.

Fault - Connect this control signal from the printer to indicate to the packaging machine that the printer has a fault.

A ***open circuit*** indicates the printer is free from problems.
A ***closed circuit*** indicates the printer is experiencing a fault. Some possible problems are:

- Cover/Cassette open
- No air pressure
- Ribbon broken
- Invalid label

Notes:

- The relay contacts open when the cassette (or cover) is opened. However, Bell-Mark recommends that *Fault* not be used to signal this condition. See *Guard Output.*
- It is possible for a host computer to read back the specific error code from the printer. See the RCMH statement in the BMPL (Bell-Mark Printer Language) Handbook.

Guard-Cassette - Connect this control signal from the printer to indicate to the packaging machine that the printer's cassette or cover is closed.

A *open circuit* indicates the printer's cassette (or cover) is open.
A *closed circuit* indicates the printer's cassette (or cover) is closed.

Low Ribbon - Connect this control signal from the printer to indicate to the packaging machine that the printer's ribbon is nearing the end. This is not considered a fault or a problem, only a warning.

A *closed circuit* indicates the printer's ribbon will soon end.

Home - Connect this control signal from the printer to indicate to the packaging machine that the printer's carriage is physically home (I-type and MLP-type printers).

A *closed circuit* indicates the printer's carriage is home.

Note:

- The carriage being home does not indicate the printer is *Ready*.

Ready-Busy - The meaning of this signal depends on which printer type is being used:

MLP (for intermittent packaging machines)	READY = the printhead is lifted and it's now OK to advance the web. But the carriage may not yet be home or able to accept the next print signal. See HOME OUTPUT below.
I-type (for intermittent packaging machines)	READY = the printhead is lifted and it's now OK to advance the web. But the carriage may not yet be home or able to accept the next print signal. See HOME OUTPUT below.
C-type (for continuous packaging machines)	READY = the printer is ready to accept the print signal.

Notes:

- MLP & I-type - the relay contacts will close (*Ready*) while the carriage is returning home.
- The relay contact will open if a problem exists. However, Bell-Mark recommends that *Busy/Ready* not be used to signal a fault condition. See *Fault Output.*

PRE-PRINT CHECKLIST

☐ Printer securely mounted & aligned.

☐ Ribbon is correctly installed.

☐ Cover is closed or cassette is installed in printer. Latch is closed.

☐ Umbilical cable between printer & control box is secure.

☐ AC Power – 1Φ voltage has been measured:

	volts

Electrical interface signals are correctly connected to packaging machine.

- ☐ Inputs (3) have no excessive voltages present
- ☐ Outputs (6) have proper loads connected.

☐ Encoder cable is connected (model EasyPrint S32c)

☐ Packaging web is correctly routed through printer bracket.

☐ Air pressure is turned on and at correct pressure:

	bars

☐ Power switch of EasyPrint control box is turned on.

☐ A label job is loaded into the control:

- o *One-Touch* Test Print
- o recalled from the Memory Card
- o downloaded from a host PC

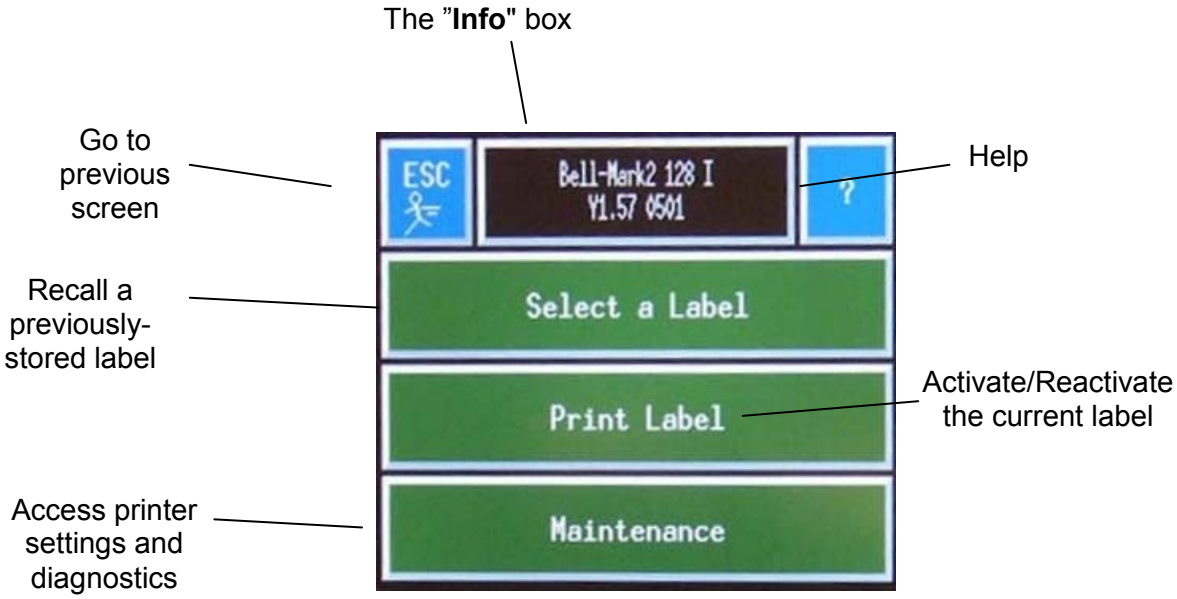
FEATURES & FUNCTIONS

THE TOUCH-SCREEN

EY3501

EY3500

The Bell-Mark touch screen may be displayed either in landscape or portrait orientation depending upon the model.



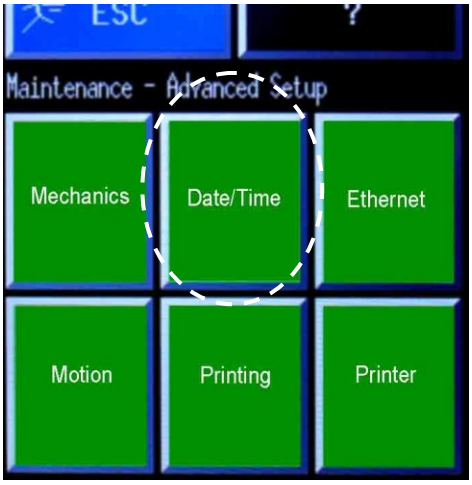
The "**HOME**" screen

SETTING TIME & DATE

Steps:

From the Home screen…

1. Press the Maintenance key
2. Press the Advance Setup key
3. Press the Date/Time key



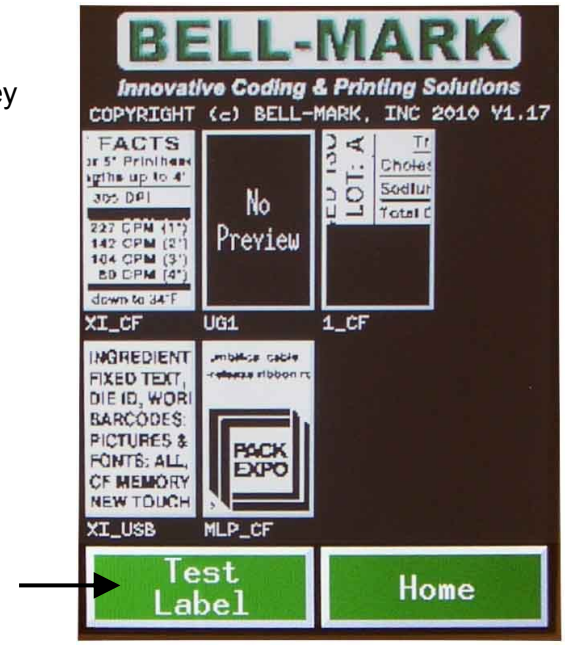
ONE-TOUCH TEST PRINT

- Quickly demonstrates the ability of the printer to print.
- Generates a printed report listing the various parameters & settings of the printer.

Upon installation, the user may have no functioning labels with which to prove that the printer was successfully installed. Bell-Mark provides a “built-in” label that can easily be called up.

Steps:

1. From the Home screen… press the ESC key
2. Press the TEST LABEL key



So long as all other print conditions are met, the printer will print a label upon getting a print signal from the packaging machine or by pressing the MANUAL PRINT key.

Notes:

- If the electrical interface connections with the packaging machine have not yet been made, see the section on **REMOTE/LOCAL Mode**.
- If the “Test Label” key is not shown, another label is already be present. Press the **Clear Label** key to revert back to the built-in Test label.

Example of a One-Touch Test print:
(Yours may not look exactly the same)

```
Bell-Mark 53 I/53 mm
Version V1.56a (Build 0503)
Jan  1  2011 12:47:42
Font Version 5.01
BOOT-SW V1.0d
FPGA:  01
Odometers: H:    195  M:    195
Date/Time: 01:01:11  08:27:52
Trigger: Edge
Darkness: 100  Temperature:  26
Headresistance: 1206 Ohm
X-Offset: 0 pixel
Multi-Index off
Printspeed 250 Backwardspeed 450
Start/Stop Speed Frwd 25 Back 50
Ramp Frwd 25 Back 25
-------------------------------------
NETWORK SETTINGS
================
MAC-Address: 00:07:4A:1B:BE:FF
IP-Address: 192.168.0.128
Netmask:  255:255:255:0
Gateway: 0.0.0.0
Link Not Connected
Transfer Mode: Auto
DHCP: OFF
Printer Name: LabelPrt01
```

Odd pixels →

Even pixels →

ETHERNET TCP/IP SETUP

The EP S32 control may be configured for connection with an Ethernet LAN.

Bell-Mark furnishes the EasyPrinter with a default IP address pre-programmed (Class C address):

192 . 168 . 0 . **128**

private network address — node address

There is a good chance that this IP address, as-delivered, will ***not*** be compatible with your network.

LAN Connection

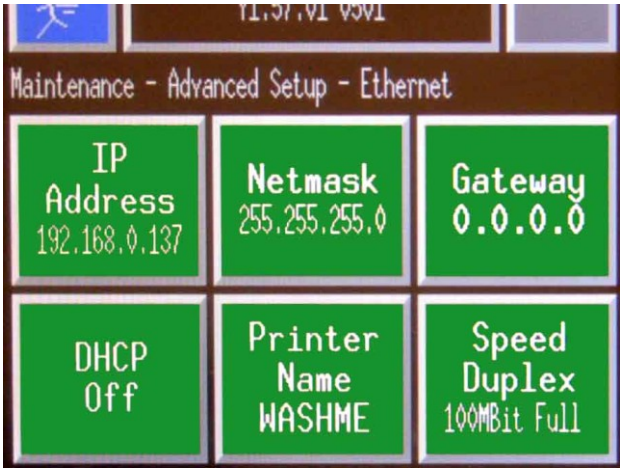
The IP-address of the Bell-Mark EasyPrint S32 system is easily reprogrammed using the touch screen. The following procedure explains how to reconfigure the IP address of the printer.

It is not necessary that the control be connected either to the printer chassis or the Ethernet cable.

Bell-Mark strongly recommends that configuring any device connected to your LAN be coordinated with your Network Administrator.

From the HOME screen...

1. Press the MAINTENTANCE key
2. Press the ADVANCED SETUP key
3. Press the ETHERNET key



Ethernet Settings Screen

USB CONNECTION

The EP S32 control may be connected as a USB printer.

USB Connection

Your PC should automatically detect the printer.

If Windows "Found New Hardware" wizard opens, just close it. Actual printer configuration is done in the label-making software VersaStyle.

SERIAL RS232 CONNECTION

The EP S32 control may be connected a serial port.

9-pin D-Sub Socket	
Pin	Signal
1	n/c
2	TX
3	RCV
4	n/c
5	GND
6	n/c
7	CTS
8	RTS
9	n/c

Default Serial Parameters are:

57600 8 N 1

SENDING A PRINT JOB

You can design labels on your PC using several different possible Windows software applications, for example, VersaStyle by Bell-Mark.

Once you have designed a label format, send it to the printer. Once the printer receives the data, it will go into the Print Mode.

Your label document name

If you need to make printer adjustments, you may press the STOP key to suspend the job and make your adjustments.

When you send the next print job, the existing one is automatically discarded and the new one becomes active.

STORING A PRINT JOB

The printer supports two types of local removable memory:

Compact Flash Card
Drive **A:**

USB Flash Drive
Drive **U:**

Print jobs can be stored to the CF Card or USB Flash Drive using either:

- VersaStyle label design software (recommended)

- Directly from the touchscreen

  From the HOME screen…

  - press the MAINTENANCE key
  - press the FILE SYSTEM key

RUN PRINT JOB (from Removable Memory)

A label that was previously stored on the CF Card or USB Memory Stick can be recalled. Loading it will automatically activate the print job.

From the HOME screen… press the SELECT A LABEL key

So long as all other print conditions are met, the printer will print a label upon getting a print signal from the packaging machine.

Note: If you already know the filename, it is also possible to directly enter the filename using:

- the on-screen alphanumeric keypad
- a standard computer keyboard
- a hand scanner

REMOTE / LOCAL MODE

Normally 2 signals from the packaging machine are required to print:

1. REMOTE ENABLE
2. PRINT

If either the wiring to the packaging machine or packaging machine programming is not yet complete, it is still possible to print using the local mode.

CONTRAST SETTING

Purpose:

To adjust the heating energy used by the thermal printhead.

Steps:
From the HOME screen… press the MAINTENANCE key

Important Notes:

- Bell-Mark recommends for the longest thermal printhead life, use the lowest setting that produces printing that meets the printing goals. This typically is between 70 - 110.
- Print darkness can be affected by things other than the Contrast setting: packaging material dyne level, ribbon type, air pressure, and printhead mounting angle.
- For special applications, contact Bell-Mark to evaluate and advise the use of higher settings.

PRINTER MECHANICS SETTINGS

The action of the printer's carriage, printhead, and ribbon drive are adjustable. Usually these are determined at installation and do not have to be readjusted.:

Item	Parameters	Description
Print Carriage	Print Speed	How fast the carriage moves across the web material. This affects machine cycle rate and may affect print quality.
Head (Print Head)	Head Down	How much time in advance of printing should the printhead be commanded to press down. This anticipation is needed to compensate for the time delays associated with the head pneumatics.
	Head Up	How much time in advance of the end of printing should the printhead be commanded to lift up. This anticipation is needed to compensate for the time delays associated with the head pneumatics.
Ribbon	Ribbon Start	How much time in advance of printing should the ribbon be commanded to start. This anticipation is needed to compensate for the time delays associated with the ribbon pneumatics or the ribbon stepper motor.
	Ribbon Stop	How much time in advance of printing should the ribbon be commanded to stop. This anticipation may be needed to compensate for the time delays associated with the ribbon pneumatics or the ribbon stepper motor.
	Ribbon Retract	C-type only – recovers unused ribbon between images.
	Ribbon Savings	C-type only – reduces ribbon consumption during printing

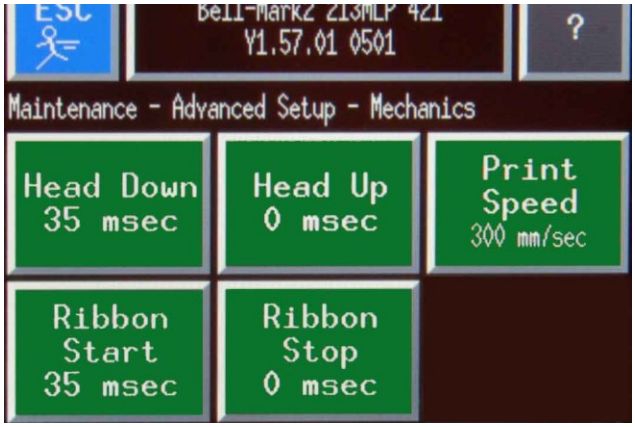
(continued on next page)

Note: The appearance of the screen will be different depending on the printer model.

Steps:
From the HOME screen…

1. Press the MAINTENANCE key
2. Press the ADVANCED SETUP key
3. Press the MECHANICS key

MLP-only



C-type only

I-type only

Notes:

- Model EP S32c internally calculates Ribbon Start time. This adjustment ***adds*** to the internally calculated value.
- The ribbon response is almost always as fast or faster than the Head Down time.

LABEL SETUP

Placement of a label or labels can be controlled by using these parameters and features:

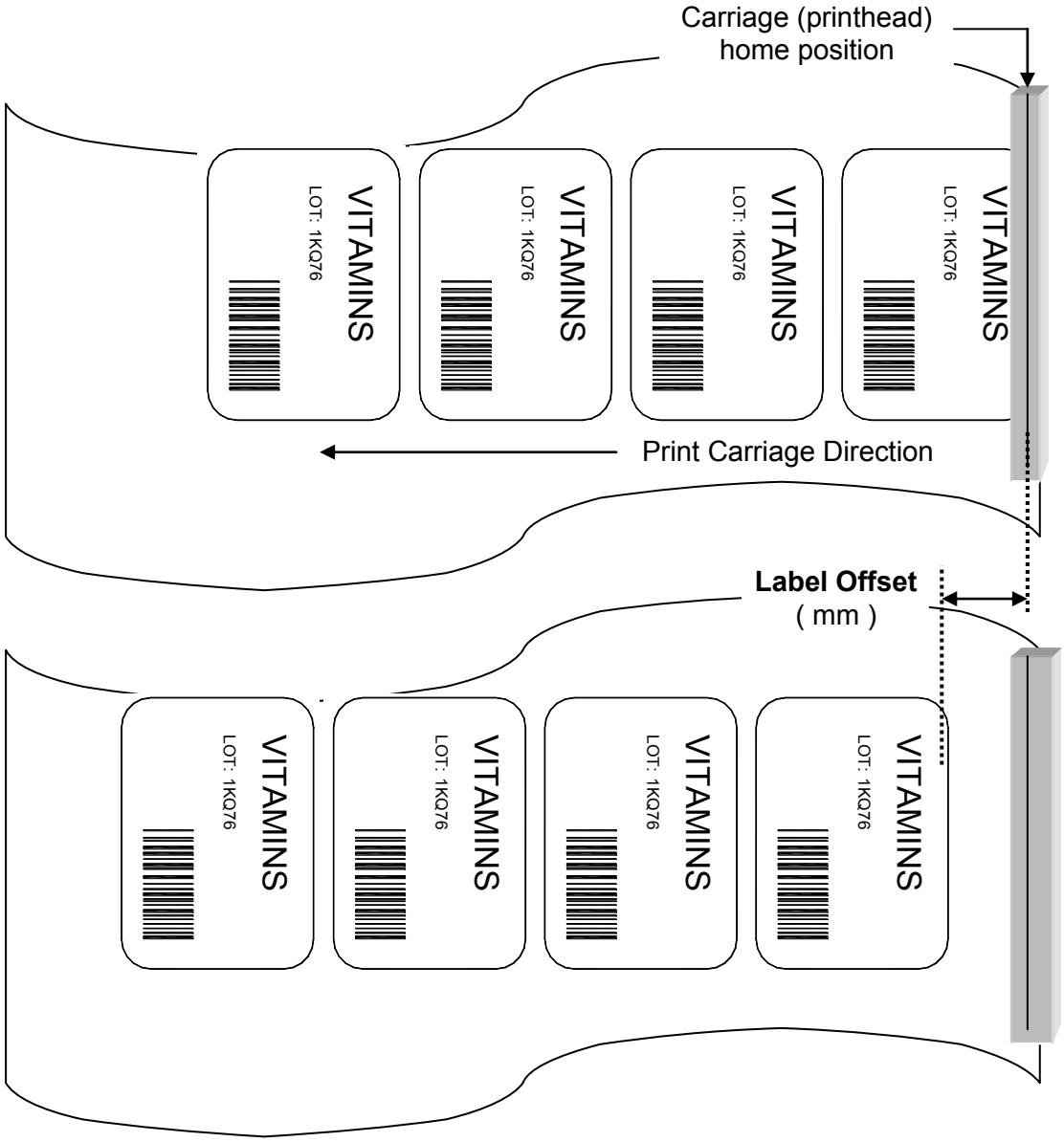
Item	Parameters	Description
label position	Label Offset X-Offset	How far the carriage should travel before printing begins How much to shift the image along the edge of the printhead
label rotation	Flip Label	Rotate (or not) the image 180°
label mirroring	Mirror Label	Use this if the image in printed on the inside of a clear package and must show through correctly.
step & repeat (MLP only)	Lanes Gap	How many times to replicate the image How much distance between prints
multiple rows or label sequencing	Multi-Pack	Enables sequential printing of the parts of a label that was designed in sections

The above are described in more detail on the following pages.

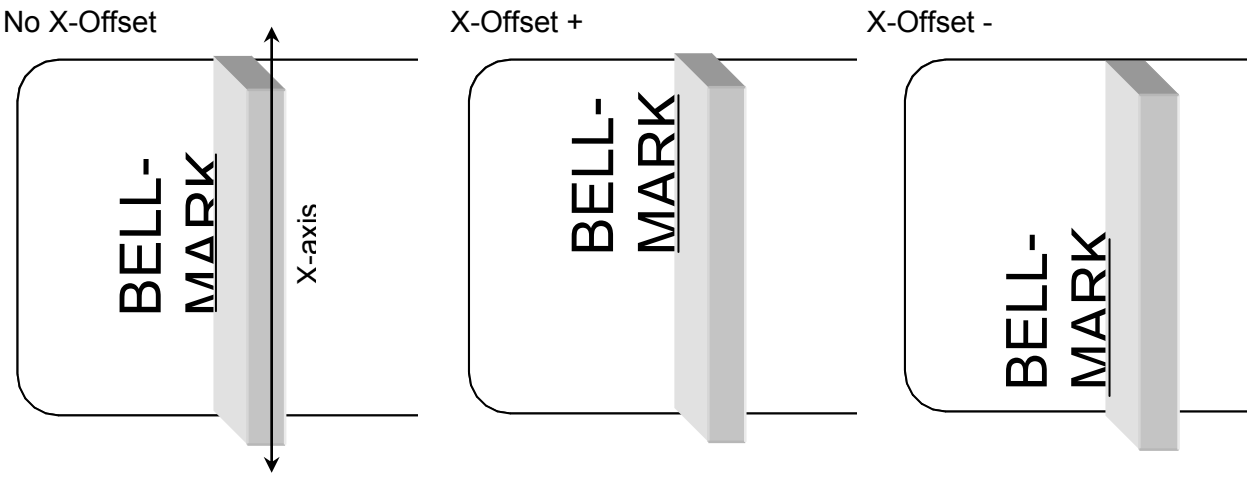
From the HOME screen…

1. Press the MAINTENANCE key
2. Press the LABEL SETUP key

Label Offset

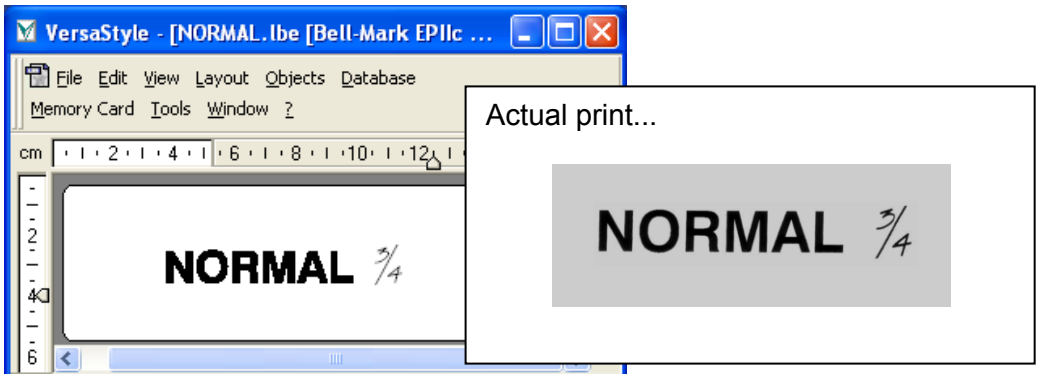


X-Offset

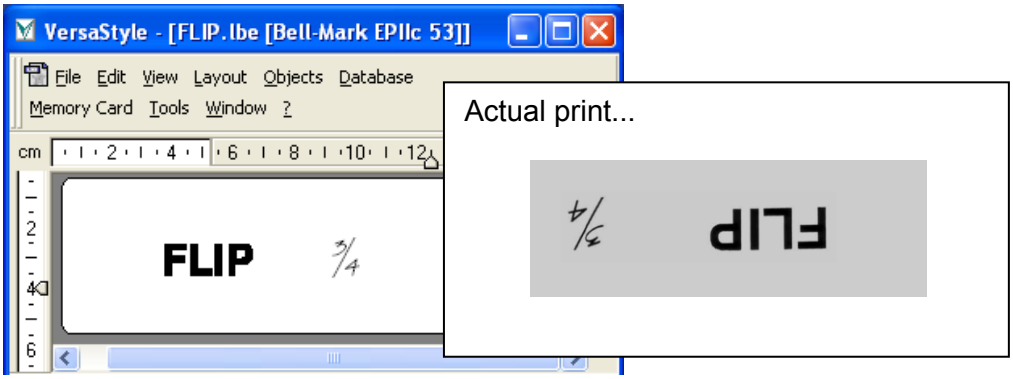


Flip

Source design (VersaStyle)...

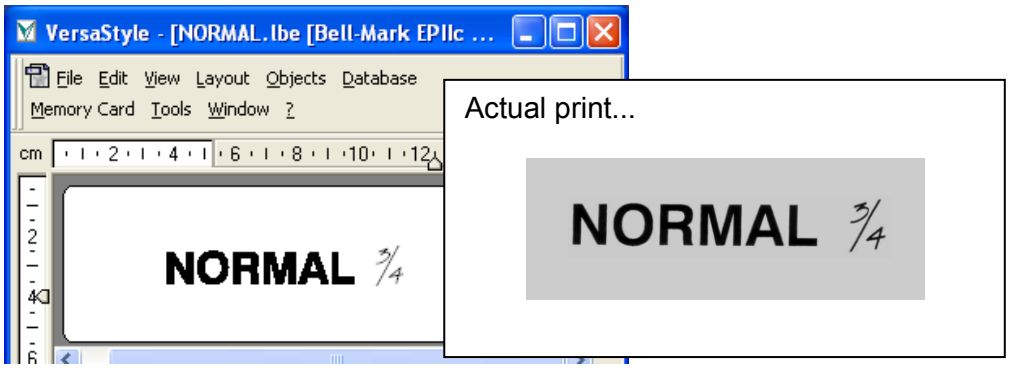


…with printer set Flip ON...

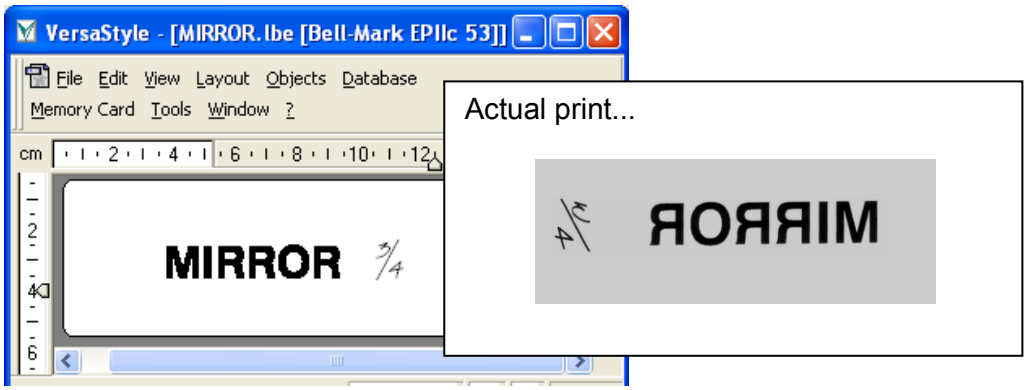


Mirror

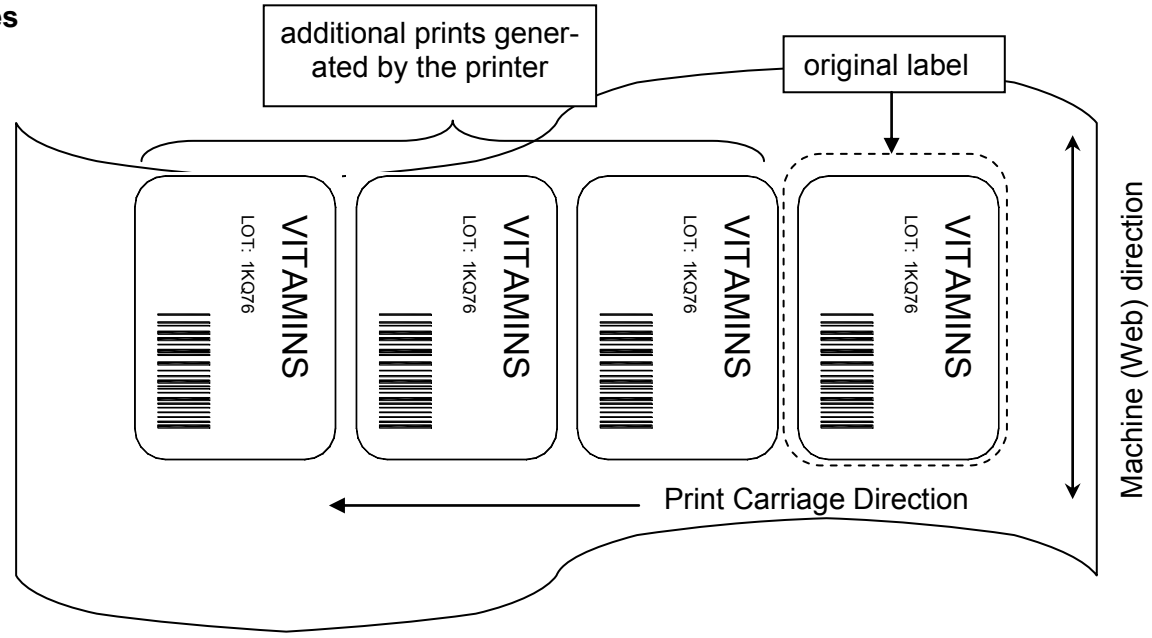
Source design (VersaStyle)...



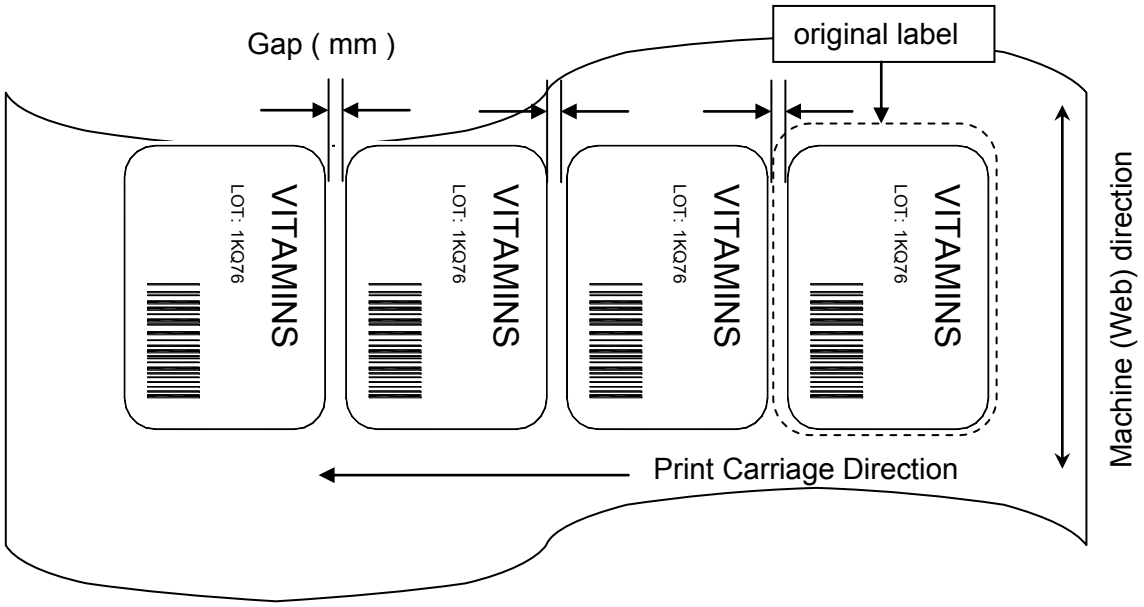
with mirror ON...



Lanes

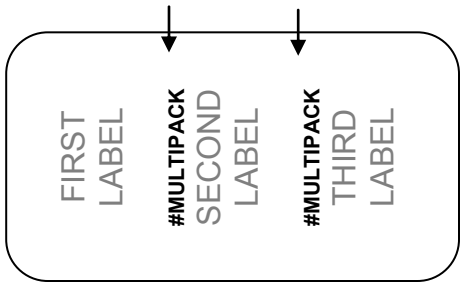


Gap



Multi-Pack

A special text field is used to designate the separation between sections of a multi-pack label design. The text in this field must be the special keyword **#MULTIPACK .** This keyword will *not* be printed.



Synchronization: The hardware input Sync can be used to reset the internal pointer to the overall beginning of the label.

Important Multi-Pack Notes:

- "#MULTIPACK" text field must be a ***printer font*** and all upper case letters. Font size is not important.
- This feature cannot be used in combination with multiple lanes (MLP printers). Thus

  Multi-Pack = ON
  Lanes = 1

Ribbon Savings

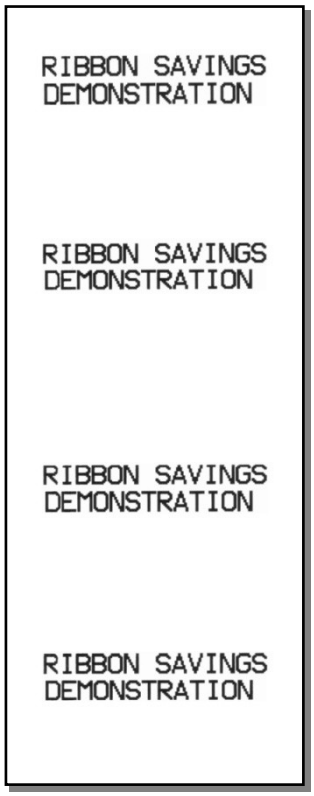
For EP S32 C models only

Background

Ribbon Saving refers to moving the ribbon at a rate slower than the packaging material.

It is possible to achieve clearly readable images while using less ribbon. If the print quality of the image is acceptable, it's then possible to save some ink ribbon costs by using Ribbon Saving.

Actual Print



Normal ribbon usage

Ribbon usage is 1:1 with printed image

With 50% Ribbon Saving

Ribbon usage is 1:2 with printed image

To adjust ribbon savings, from the Home screen…

1. Press the Maintenance key
2. Press the Advance Setup key
3. Press the Mechanics key

Notes:

- With small amounts of Ribbon Savings, print may actually be improved (appear darker).
- Very high settings for percentage Ribbon Saving may make the print appear grey.
- At some printing conditions (very high speeds), introducing Ribbon Saving may actually be necessary to maintain print quality.
- Ribbon Saving is not compatible with "*sticky*" web material. If Ribbon Saving is expected to be used, Bell-Mark strongly recommends that a test be conducted first to determine if the material is compatible.

MANUALLY CLEAR THE PRINT BUFFER

The currently active print job can be purged. This assures there are no vestiges of prior print jobs being held in the print buffer memory.

From the Home screen, press the ESC key…

press Clear Label to purge the current print job

Notes:

- Once the print buffer is cleared, pressing the TEST key will now call up the One-Touch Test Print

CONNECT AN EXTERNAL COMPUTER KEYBOARD OR SCANNER

For most cases, the touch screen allows the user to easily adjust settings, perform Memory Card functions, and provide “Operator Entry” variable data.

However, Users may find it important to make these entries using a standard computer keyboard.

Steps:

1. Plug the keyboard con-nector jack. Wait a few moments.

2. You may press CAPS LOCK LOCK and observe the keybo indicators to confirm the keyb functioning.

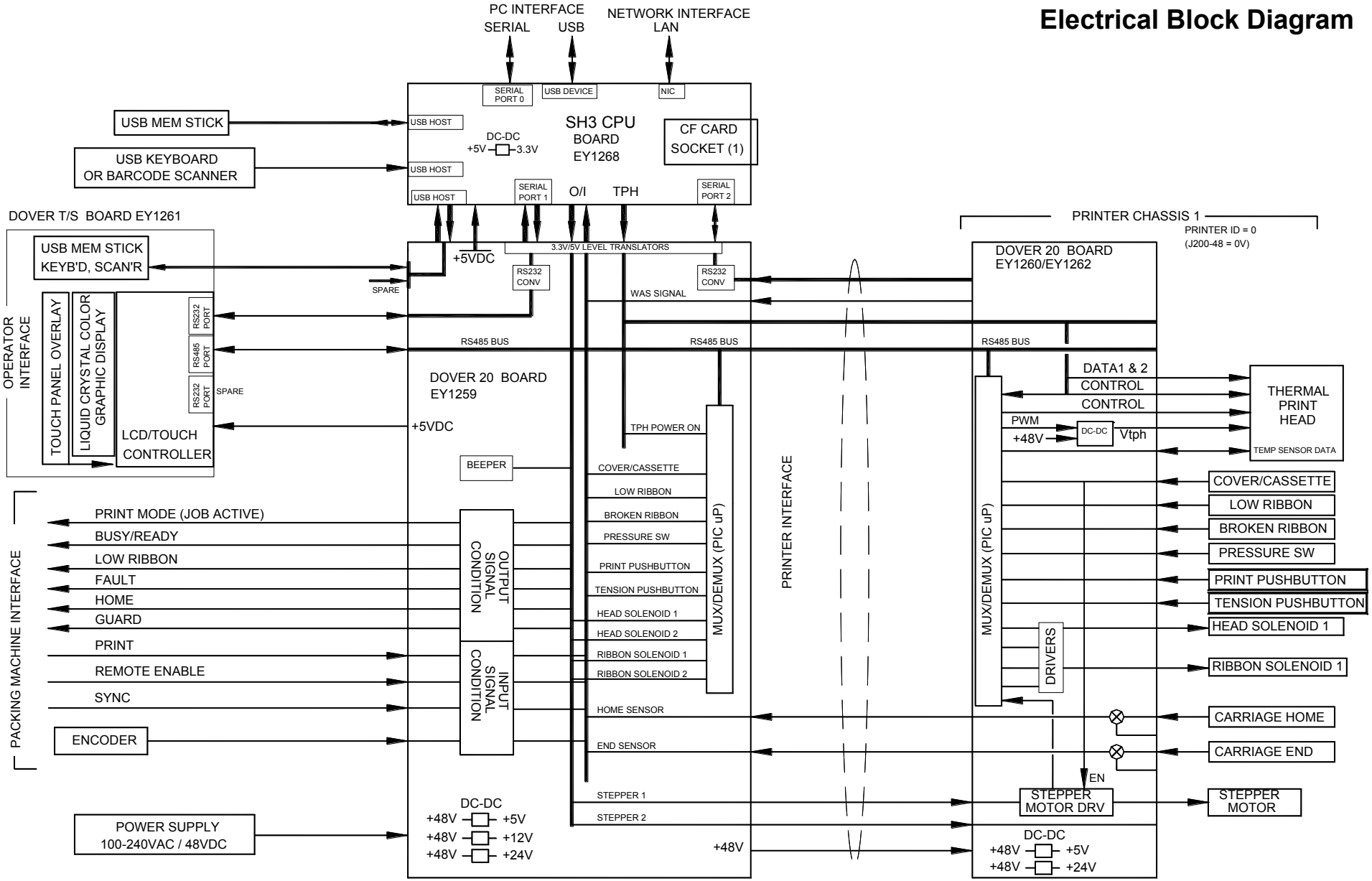
3. If the external keyboard is for US country, see the following configure the printer to recogn keyboard.

These keys on the external keyb

-------- scroll keys --------

Ext. Keyboard Key	**ESC**	**Enter**	→	←	↑	↓	**F7**
Printer	**ESC**	**Enter**	▶	◀	▲	▼	**Start/ Stop**

Electrical Block Diagram



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